QUALITY CONTROL REPORTS FOR

SEMI DENSE BITUMINOUS CONCRETE

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/KRIDL/W.No.07/CSR.12/714/SDBC(QB)/2014-15 26.12.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* CUSTOMER	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* AGENCY	:	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
* NAME OF WORK	:	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
SAMPLE ID	:	Bitumen
SAMPLE RECEIVED ON	:	24.12.2014
PERIOD OF TESTING	:	24.12.2014 to 26.12.2014

The results of the tests conducted on the bitumen sample for Semi Dense Bituminous Concrete

Sl.No	Description	Technical Reference	Test Result	Requirement as per IS: 73-2013
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	IS: 1203-1978 (RA-2009)	87.0	80 to 100
2	Softening point, ^{0}C	IS: 1205-1978 (RA-2009)	46.0	Min. 40
3	Ductility at 27^{0}C, cm	IS: 1208-1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS: 1209-1978 (RA-2009)	302	Min. 220

*Information is furnished by the Customer/Representative.

Civil-Tech Consultants & Engineers Bangalore

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/AIV/2014-15

26.12.2014

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	26.12.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	297	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.45	22.25	22.35

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/AIV/2014-15 26.12.2014

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	26.12.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	391	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	304	303	
4	Aggregate Impact value = percent fines $100^* (W_2/W_1)\%$	22.25	21.91	22.08

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/AIV/2014-15 26.12.2014

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	26.12.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390.5	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	307	306.5	
4	Aggregate Impact value = percent fines $100^* (W_2/W_1)\%$	21.08	21.51	21.30

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Shape_T/2014-15 : 27.12.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 27.12.2014

Result : Flakiness Index = **11.85%**

Elongation Index = **13.66%**

Result : Combined Flakiness & Elongation index **25.51%**

Comments:

→ Maximum allowable Flakinee & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Shape_T/2014-15 : 27.12.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 27.12.2014

Result : Flakiness Index = **12.65%**

Elongation Index = **13.92%**

Result : Combined Flakiness & Elongation index **26.57%**

Comments:

→ Maximum allowable Flakinee & Elongation Index for Semi Dense Bituminous Concrete is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 27.12.2014

Result : Flakiness Index = **11.69%**

Elongation Index = **13.85%**

Result : Combined Flakiness & Elongation index 25.54%

Comments:

→ Maximum allowable Flakinee & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/KRIDL/W.No.07/TC/2014-15 30.12.2014

DETERMINATION OF RATE OF SPREAD PRIME/TACK COAT

CUSTOMER	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
NAME OF WORK	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
SAMPLE ID	Cross Roads in Bellikallappa Layout Ward No.07, Byatarayanapura
DATE OF TESTING	30.12.2014

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	mt	0.45 X 0.45	0.45 X 0.45
Area of Plate (a)	Sq.m	0.2025	0.2025
Intial Wt of empty Plate (b)	Kg	1.624	1.633
Final weight of plate after application of prime /Tack Coat (c)	Kg	1.748	1.759
Weight of Prime/Tack Coat (d=c-b)	Kg	0.124	0.126
Rate of spread of prime /tack coat	kg/Sq.m	0.612	0.622
Average	kg/Sq.m	0.617	
Specified Limit	kg/Sq.m	0.60 Kg/sq.m	

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Stripping/2014-15 30.12.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the work	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	30.12.2014

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.27	96.73
2	3.1		
3	3.4		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Sp_Wa/2014-15 31.12.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	31.12.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2023	2025	2022	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1268	1270	1267	
4	Weight of saturated surface dry aggregate in air	W_3 g	2010	2012	2015	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	742	742	748	
6	Weight of oven dried aggregate	W_4 g	1995	1998	1999	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.689	2.693	2.672	2.685
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.744	2.745	2.731	2.740
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.75%	0.70%	0.80%	0.75%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Bit/2014-15 30.12.2014

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
SAMPLE I/D	a) Near Lakshmi Narasimha Nilaya, Pachhamma Thai Temple Road. b) Opp. House No.36, Channegowda House Road.
DATE OF TESTING	30.12.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474.5	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25.5	26.00
7. Bitumen content in %	5.10	5.20
8. Average	**5.15**	

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Bit/2014-15 30.12.2014

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IS2386 & IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	Improvements of Roads in Bhikkallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
SAMPLE I/D	a) Near Lakshmi Narasimha Nilaya, Pachhamma Thai Temple Road. b) Opp. House No.36, Channegowda House Road.
DATE OF TESTING	30.12.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	34.26	7.22	7.22	92.78	90-100
4.75	265.8	56.02	63.24	36.76	35-51
2.36	53.47	11.27	74.51	25.49	24-39
1.18	44.58	9.40	83.90	16.10	15-30
0.3	27.89	5.88	89.78	10.22	9-19
0.075	23.56	4.97	94.74	5.26	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	32.36	6.83	6.83	93.17	90-100
4.75	254.8	53.76	60.58	39.42	35-51
2.36	55.94	11.80	72.38	27.62	24-39
1.18	47.15	9.95	82.33	17.67	15-30
0.3	36.27	7.65	89.98	10.02	9-19
0.075	25.94	5.47	95.46	4.54	3-8

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Bit/2014-15 31.12.2014

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
SAMPLE I/D	a) Opp. Latha Manjunatha Nilaya, Balaji Tailor Road. b) Beside Abhinay Tailor Shop, Jagadish Floor Mill Road.
DATE OF TESTING	31.12.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474.5	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25.5	25.50
7. Bitumen content in %	5.10	5.10
8. Average	**5.10**	

Note:

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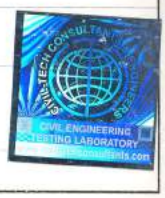
Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/Bit/2014-15 31.12.2014

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IS2386 & IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
SAMPLE I/D	a) Opp. Latha Manjunatha Nilaya, Balaji Tailor Road. b) Beside Abhinay Tailor Shop, Jagadish Floor Mill Road.
DATE OF TESTING	31.12.2014



GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	37.12	7.82	7.82	92.18	90-100
4.75	259.8	54.75	62.58	37.42	35-51
2.36	54.82	11.55	74.13	25.87	24-39
1.18	46.36	9.77	83.90	16.10	15-30
0.3	28.74	6.06	89.96	10.04	9-19
0.075	25.48	5.37	95.33	4.67	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	36.23	7.64	7.64	92.36	90-100
4.75	251.9	53.09	60.72	39.28	35-51
2.36	56.28	11.86	72.58	27.42	24-39
1.18	42.77	9.01	81.60	18.40	15-30
0.3	31.52	6.64	88.24	11.76	9-19
0.075	29.58	6.23	94.47	5.53	3-8

Note:

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/AGG/2014-15 30.12.2014

Aggregate Gradation Test

IS : 2386 Part I

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	30.12.2014

Total Weight of Sample: **5350** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	422	7.9	7.89	92.11	90-100	
4.75	2672	49.9	57.83	42.17	35-51	
2.36	665	12.4	70.26	29.74	24-39	
1.18	481	9.0	79.25	20.75	15-30	
0.3	415	7.8	87.01	12.99	9-19	
0.075	365	6.8	93.83	6.17	3-8	

Total Weight of Sample: **5250** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	255	4.9	4.86	95.14	90-100	
4.75	2565	48.9	53.71	46.29	35-51	
2.36	817	15.6	69.28	30.72	24-39	
1.18	511	9.7	79.01	20.99	15-30	
0.3	408	7.8	86.78	13.22	9-19	
0.075	375	7.1	93.92	6.08	3-8	

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SDBC/AGG/2014-15 31.12.2014

Aggregate Gradation Test

IS : 2386 Part I

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	31.12.2014

Total Weight of Sample: **5300** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	415	7.8	7.83	92.17	90-100	
4.75	2678	50.5	58.36	41.64	35-51	
2.36	695	13.1	71.47	28.53	24-39	
1.18	473	8.9	80.40	19.60	15-30	
0.3	415	7.8	88.23	11.77	9-19	
0.075	375	7.1	95.30	4.70	3-8	

Total Weight of Sample: **5200** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	248	4.8	4.77	95.23	90-100	
4.75	2542	48.9	53.65	46.35	35-51	
2.36	816	15.7	69.35	30.65	24-39	
1.18	508	9.8	79.12	20.88	15-30	
0.3	427	8.2	87.33	12.67	9-19	
0.075	396	7.6	94.94	5.06	3-8	

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Job No.: CTCE/BBMP/KRIDL/W.No.07/CEMENT/2014-15

Date: 14.07.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	:	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
SAMPLE ID	:	Cement
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4)	28.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5)	155 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	480 Minutes	Not More than 600 Minutes
3	Soundness by the Le-Chatelier method	IS-4031 (Part 3)	1 mm	Not more than 10 mm

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Job No.: CTCE/BBMP/KRIDL/W.No.07/SAND/2014-15 : 14.07.2014

TEST REPORT ON FINE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager - 2,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013

Date of Testing : 14.07.2014

Material : Sand Total Wt. of Aggregates in gms **2000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	102	5.10	5.10	94.9	90-100
2.36	215	10.75	15.85	84.2	75-100
1.18	523	26.15	42.00	58.0	55-90
600 Micron	432	21.60	63.60	36.4	35-59
300 Micron	475	23.75	87.35	12.7	8-30
150 Micron	206	10.30	97.65	2.4	0-10

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Job No.: CTCE/BBMP/KRIDL/W.No.07/AGG/2014-15 : 14.07.2014

TEST REPORT ON FINE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager - 2,** KRIDL, BBMP, Bangalore.

Name of Work : Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013

Date of Testing : 14.07.2014

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **25000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	990	3.96	3.96	96.04	95-100
20	15645	62.58	66.54	33.46	30-70
10	5570	22.28	88.82	11.18	10-35
4.75	2335	9.34	98.16	1.84	0-5

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Job No.: CTCE/BBMP/KRIDL/W.No.07/STEEL/2014-15 21.07.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the work	:	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Date of Test	:	21.07.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	10	0.62	513	556	13.45	O.K	O.K

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Job No.: CTCE/BBMP/KRIDL/W.No.07/STEEL/2014-15 21.07.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the work	:	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Date of Test	:	21.07.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	12	0.89	515	558	13.60	O.K	O.K

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Job No.: CTCE/BBMP/KRIDL/W.No.07/STEEL/2014-15 21.07.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager - 2,** KRIDL, BBMP, Bangalore.
Name of the work	:	Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013
Date of Test	:	21.07.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	16	1.58	520	563	13.85	O.K	O.K

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Job No.: CTCE/BBMP/KRIDL/W.No.07/CUBE/2014-15 20.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager - 2,** KRIDL, BBMP, Bangalore.

Name of the work : Improvements of Roads in Bellikallappa Layout in Ward No.07, Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : EE/BTP/KRIDL/W.O/217/2013-14 Dated: 30.12.2013

Sample ID : Culvert Deck Slab Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 28^{th} day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	23.07.2014	20.08.2014	8.157	495.7	22.03
2	23.07.2014	20.08.2014	8.263	506.5	22.51
3	23.07.2014	20.08.2014	8.378	518.2	23.03

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